PREMIER PLASTICS INC. March 2014

DRAFT DEFINITIONS- SEPTIC DOSING SYSTEMS

UNIFORM DISTRIBUTION

Intermittent distribution of effluent to a dispersal field by equal uniform flow through evenly spaced orifices facing UPWARDS on pipe laterals. Deviation in flow rate from first to last orifice to be no more than 20%. ?
Intermittent flow generation can be by Pump, Floating Outlet Device, Siphon or other approved method.
Suggested minimum squirt height to scour the opening and limit fouling from bacterial growth:
Orifice Diameter – Squirt Height: 1/8" – 5', 5/32" – 3', 3/16 – 2', 1/4" – 1.5', 3/8" – 0.3'

PUMPED DOSING (Field above or below septic tank)

Intermittent delivery of a pre-determined duration and flow rate of effluent to the field by pump and automatic controls.

STATIC HEAD DOSING (field below septic tank)

Intermittent delivery of a pre-determined volume of effluent to the field by use of static head generated by the vertical distance of the septic (treatment) tank outlet above the inlet to the dispersal field. Current devices for this application are Floating Outlet or Siphon.

FLOOD DOSING

Any dosing method delivering an intermittent pre-determined volume through a distribution box or tipping box to 3" or 4" laterals with close spaced ½"or 5/8' dia. DOWNWARD facing orifices.

TRICKLE DOSING

Effluent delivered via a distribution box to a field by gravity overflow from the septic tank. Laterals are typically 3" or 4" with close spaced ½" or 5/8" DOWNWARD facing orifices.

GRAVITY DOSING

Any dosing method that does not require a pump. Gravity dosing includes Static Head Dosing, Flood Dosing and Trickle Dosing.

UPWARD FACING ORIFICES

Discharge from UPWARD facing orifices in a fully flooded lateral will be uniform whether the effluent is just spilling out of a level pipe (similar to an elongated D-Box) or driven by pressure from a few inches to several feet of residual head. The discharge is predictable and uniform to the end of the discharge cycle. The residual head, flow rate, discharge volume and cycle time have little or no bearing on the uniformity of distribution. A very low flow rate will result in very low uniform squirt heights.

DOWNWARD FACING ORIFICES

The uniformity of discharge from DOWNWARD facing orifices is dependent on the number of orifices, flow rate, dose volume and gradient. The very low flow rate, very low dose volume and close spacing of large orifices in the lateral pipes of Trickle systems results in limited penetration of effluent into the disposal field. Penetration further into the field, or to the full length of the laterals can be achieved by using intermittent high flow rate and high dose volume (Flood Dosing). Effluent travels further down the lateral by overwhelming the orifices at the start of the lateral. A slight gradient of say 2% will also encourage effluent to move down the lateral.
Even with full penetration of the lateral, the uniformity of distribution is likely irregular but results in vastly increased performance over Trickle dosing. This method of dosing would not be suitable for Type 2 or 3 Treatment systems.

IN SUMMARY

Dispersal fields using UPWARD facing orifices should be acceptable as capable of providing uniform distribution to any type of field design. Uniform distribution can be achieved regardless of dynamic or static head, flow rate, squirt height and duration of discharge.
Dispersal fields using DOWNWARD facing orifices should be reserved for Type 1 systems only. Although effluent can be distributed over the entire field (with Flood Dosing), the specific rate of discharge at various points along the lateral may vary and be difficult to predict, but nevertheless we 'know' it is far superior to the Trickle design.

HISTORICAL NOTE (see Province of BC document 1978)

It appears from the Province of BC document dated 1978 that pressure systems were originally proposed to eliminate the 'progressive failure' of Trickle dispersal fields. Today (36 years later), the focus is on Type 2 and 3 treatment systems, and the original intent to improve Type 1 systems has been overlooked with no attempt to address the 'progressive failure' of Type 1 systems.